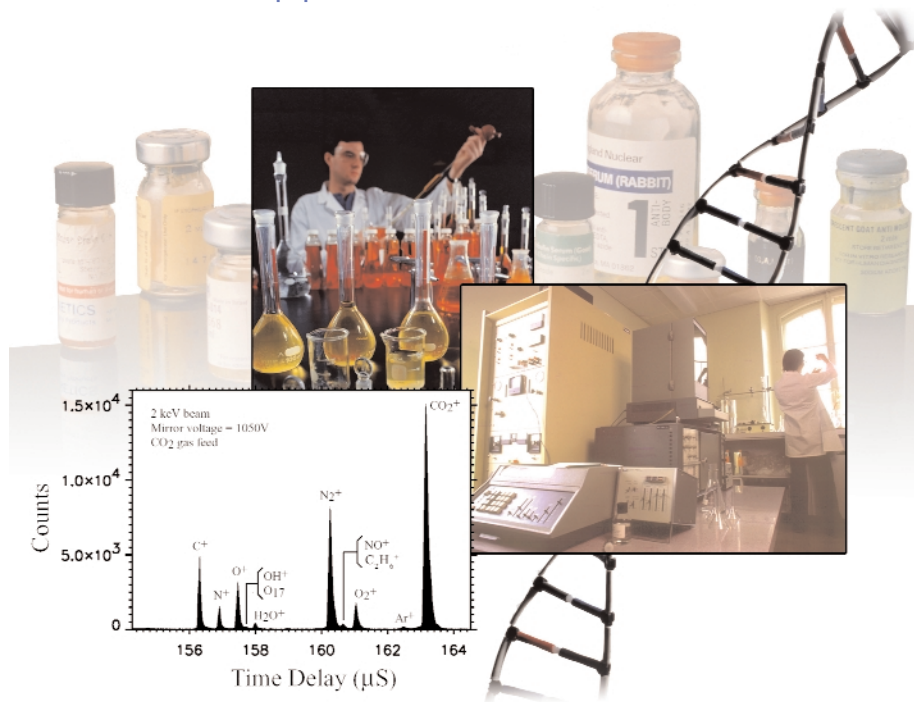


Compact Mass Spectrometer

for Biotech Applications and General Laboratory Users



NASA offers companies the opportunity to license and commercialize this technology.

Developed at NASA's Marshall Space Flight Center, this time-of-flight mass spectrometer (TOF-MS) analyzer offers a reduced size while maintaining the capabilities of many larger instruments. This technology utilizes a new, compact, drift-tube design that achieves outstanding performance in a small package. NASA's technology can be used in instruments performing a variety of analyses in biotechnology, pharmacology, and general chemistry.

Benefits

- **Compact** – powerful mass spectrometer analyzer contained in a small package (1 l of volume, 1 kg in weight, 1 W of power)
- **Sensitive** – wide mass range extending from 0 to 3,000 Daltons
- **Accurate** – current mass resolution of over 3,000 and can be easily improved to more than 15,000
- **Simplified design** – operation of spectrometer requires fewer electrical voltages than conventional designs
- **Flexible** – compatible with multichannel plate, electron multiplier, and Faraday cup detectors
- **New uses** – smaller drift tube enables use of TOF-MS technology in applications that are not possible with larger instruments
- **Cost** – simple design and compact structure results in lower manufacturing costs than other instruments





Commercial Opportunities

This technology is part of NASA's technology commercialization program, which seeks to stimulate commercial use of NASA-developed technologies. NASA invites companies to consider using this technology through exclusive, nonexclusive or exclusive field-of use licensing.



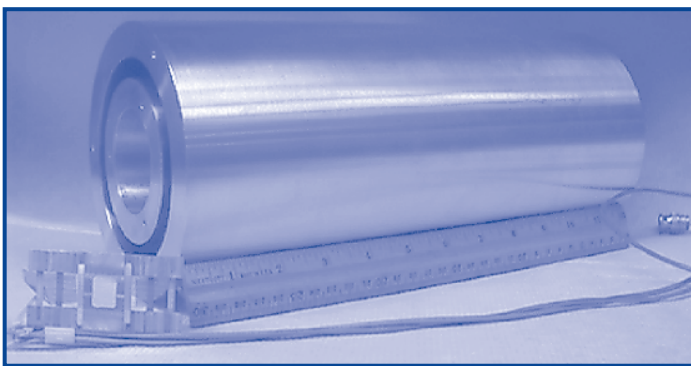
Commercial Applications

- Advanced laboratory analysis for chemical compounds
- Pharmacology and biotechnology analysis applications such as genomics, proteomics, and drug development
- Forensic studies and antiterrorism detectors
- Environmental monitoring
- Cosmic plasma measurements
- Detection of oxygen isotopes in the Solar Wind
- Differentiation of N_2 / CO / NO

The Technology

This mass analyzer forms the heart of a powerful laboratory instrument and utilizes its new design in many ways. The instrument can be used in advanced mass spectrometry (MS) applications in a compact, bench-top unit. The small size of this technology also enables the creation of dual magnetic and electro-static tandem MS—for sophisticated, high-resolution MS-MS analysis.

Ions are introduced into the system by an ion gun and are circulated about the center of the ion optics. A long path length is created in the drift tube, which enables an ion pulse to spread out according to mass: ions with light mass will travel faster, while heavier ions will travel slower. A high-resolution mass spectrum can be obtained by detecting the ions spatially using a multichannel plate or collecting them at a specific location with a Faraday cup.



Due to the new technology employed in the drift tube, the size of the mass spectrometer analyzer can be reduced to 1 liter of volume and 1 kg of weight, without compromising the capabilities of the instrument. This technology can benefit chemical analysis in many fields; it is particularly suited to pharmacology, biotechnology, and other advanced chemical analysis opportunities.

For More Information

If you are interested in pursuing commercialization of this technology or if you want more information, please contact:

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